

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A mobile robot ~~using an image sensor~~, comprising:  
an image ~~capture unit for photographing the~~ capturer that captures, at predetermined intervals, images of a bottom surface according to in accordance with motion of a mobile robot ~~at a certain intervals and capturing images by using an image sensor~~;

a displacement measurer ~~for measuring~~ that measures displacement ~~about~~ with respect to the captured image; and

a microcomputer ~~for outputting~~ that outputs an actual moving distance by direction and motion of the mobile robot on the basis of a value of the measured displacement ~~value~~.

2. (Currently Amended) The mobile robot of claim 1, further comprising:

a memory ~~for storing images outputted~~ that stores images output from the image ~~capture unit~~ capturer; and

a comparator ~~for comparing~~ that compares an image presently ~~outputted~~ output from the image ~~capture unit~~ capturer with a ~~previous~~ an image previously stored in the memory.

3. (Currently Amended) The mobile robot of claim 2, wherein the displacement measurer measures a moving path of pixels of an image of each frame ~~outputted~~ output from the comparator.

4. (Currently Amended) The mobile robot of claim 1, wherein the image capture unit capturer captures an image of the bottom surface having 18\*18 pixel and 64-degrees brightness by 1500 frames per second.

5. (Currently Amended) The mobile robot of claim 1, wherein the image capture unit capturer includes:

a luminous diode for irradiating light;

a light guide for guiding the irradiated light; and

an image sensor for capturing an image ~~about~~ of the bottom surface by sensing an intensity variation of light reflected ~~onto~~ from the bottom surface through a light lens ~~according to~~ in accordance with motion of the mobile robot.

6. (Currently Amended) A method for measuring a moving distance of a mobile robot ~~by using an image sensor~~, comprising:

~~photographing the~~ capturing, at predetermined intervals, an image of a bottom surface according to motion of a mobile robot ~~at a certain intervals and capturing by~~ utilizing an image sensor;

measuring displacement between the captured images; and

outputting an actual moving distance by calculating direction and motion of the mobile robot on the basis of a value of the measured displacement ~~value~~.

7. (Original) The method of claim 6, further comprising:

storing the captured image.

8. (Currently Amended) The method of claim 6, wherein the capturing comprises dividing the image ~~is divided~~ into a certain predetermined number of pixels in ~~the image capturing step~~, each pixel ~~receives~~ receiving light reflected onto the bottom

surface according to a material of the bottom surface and is discriminated by black and white brightness.

9. (Original) The method of claim 8, wherein the image is captured by 1500 frames per second so as to have 18\*18 pixels and 64-degrees brightness.

10. (Currently Amended) The method of claim 9, wherein the actual moving distance is calculated by dividing a pixel moving distance by a ~~certain~~ predetermined time, more preferable, time of about 1/1500sec.

11. (Currently Amended) The method of claim 8, wherein the displacement measuring comprises measuring a moving distance ~~is measured~~ according to direction of the pixel and magnitude of movement in the image ~~in the displacement measuring step.~~

12. (Currently Amended) The method of claim 6, wherein, in the displacement measuring, when two captured images are the same, it is judged that the mobile robot is not moved moving, ~~when each captured image is the same in comparison, and when two captured images are not the same,~~ it is judged that the mobile robot is moved, ~~when each captured image is not the same in comparison in the displacement measuring step~~ moving.

13. (New) A mobile robot comprising:

an image capturer that captures, at predetermined intervals, images of a predetermined surface based upon motion of the mobile robot, the mobile robot being configured for movement with respect to the predetermined surface;

a displacement measurer that measures displacement in accordance with the captured image; and

a calculator that outputs a moving distance on the basis of a value of the measured displacement.

14. (New) The mobile robot of claim 13, the image capturer including an image sensor.

15. (New) The mobile robot of claim 13, further comprising:  
a memory that stores images output from the image capturer; and  
a comparator that compares an image presently output from the image capturer and a previous image output by the image capturer and stored in the memory.

16. (New) The mobile robot of claim 13, wherein the image capturer comprises:  
a luminous diode that radiates light;  
a light guide that guides the light radiated by the luminous diode; and  
an image sensor that captures an image of the predetermined surface by sensing an intensity variation of light reflected by the predetermined surface through a lens in accordance with a motion of the mobile robot.

17. (New) The mobile robot of claim 13, wherein the displacement measurer is configured such that when each of two captured images are the same, it is determined that the mobile robot is not moving and when each of two captured images are not the same, it is determined that the mobile robot is moving.

18. (New) The method of claim 6, wherein when two captured images are the same, the mobile robot is determined to not be moving and when two captured images are different, the mobile robot is determined to be moving.